EVALUATION OF FORT PECK WARM WATER HATCHERY

by

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ABSTRACT

The author of this report was commissioned by Walleye's Unlimited to evaluate the Fort Peck Warm Water Hatchery in an effort to determine operating efficiency and the means if any to increase that efficiency. Fort Peck Warm Water Hatchery (hear after referred to as FPH) was conceived and designed to be a "warm water" hatchery and was to focus on the fry and fingerling production of the following species: walleye, sauger, tiger muskie, northern pike, large mouth and small mouth bass, channel catfish, pallid sturgeon, various forage fish, and chinook salmon. The general consensus has been that the hatchery has been underutilized. After careful examination of the infrastructure of the facilities at FPH, the author has determined a number of possible solutions which are listed below:

1.) **Double Cropping** – simply involves the control of egg incubation temperatures allowing the hatchery to prolong hatching of one or more species and allowing an other(s) to hatch more quickly. This allows one or more species to be growing while others are still in the hatching jars. This form of management allows for the increase in numbers of species being produced.

2.) **Forage Fish Production** – the pond production of a forage species such as fathead minnows. This would provide a food source for broodstock and advanced stage I or stage II fingerlings such as walleye, northern pike, and other predatory species. The forage fish might also be stocked to enhance food availability in bodies of water where the food supply is marginal.

3.) **Feed Training of Fingerlings** – this involves the starting of fry on live zooplankton, either cultured in ponds or in tanks, and might include indigenous zooplanktons from lake water or organisms such as artemia and / or rotifers. Fry would typically be weaned from a live diet to a dry or semi-moist fry feed. Feed training is essential in the production of larger fingerlings such as stage I and stage II fingerlings which would be stocked later in the season. Feed training allows the fingerlings to be held in ponds or tanks without the continued use of live zooplanktons or forage fish. Feed training is also useful when developing captive broodstock.

4.) **Reduction of Walleye Fry Release Numbers** – research has shown that the stocking of fingerlings in place of fry results in greater survival rates. Instead of producing 25 million walleye fry for stocking, it is suggested that fewer fry be released and more stage I and stage II advanced fingerlings be released. It may prove more productive to raise 4 million stage I (2- 4 inches), and 2 million stage II (5 – 8 inches). Fry which are released are less robust and generally become forage for larger organisms therefore it makes more sense to stock a larger fish.

5.) **Infrastructure Changes** – although FPH was designed as a state-of-the-art facility a few changes may be necessary to improve efficiency. If feed training is initiated it may increase success by using training tanks that are dark colored instead of the light colored tanks now onsite as most predatory fish fry are visual feeders and take to feed better when started with tanks of a dark background. The addition of live food culture vessels for artemia and rotifers might prove very

valuable. The addition of broodstock holding systems would prove most valuable for future double cropping and captive broodstock development. It might prove necessary to build a small addition to house additional tanks for holding broodstock. This would allow for manipulation and regulation of spawning times. It would also allow for broodstock to be captured in the fall and held for spawning in late winter/early spring. The addition of tunnel type greenhouses placed over the raceways would also provide greater efficiency by allowing broodstock to be held in raceways overwinter, and by allowing the raceways to serve as an early incubation/culture pond for zooplankton production. The addition of fry culture systems which utilize water recycle technology would also increase the numbers and varieties of fish being produced. A facility which would produce approximately 12 million stage I feed trained fingerlings could be built for about $2 million, minus the cost of the building to house it. In addition it is suggested that oxygen saturation equipment be added that could be used to increase oxygen levels that stocking densities might be increased. It is suggested that Mr. Steve Van Gorder of Fresh Culture Systems be hired to evaluate and design the additional hatchery infrastructure, this due to the fact that Mr. Van Gorder has great experience in designing and building high density intense aquaculture systems. The Fresh Culture hatchery systems can produce 12 million stage I fingerlings at a building cost of about $2 million.

6.) **Sales of Excess Fry/Fingerlings** – although privatization has been ruled out as an option at FPH it is suggested that any excess fish production be sold to private individuals and commercial farms. This has been the practice of MFWP in the past with excess trout eggs or

fry. There are a number of commercial fish farms around the USA which might be interested in purchasing fry or fingerlings especially of fish such as walleye and yellow perch. If these fingerlings were readily available many fish farms might add these fish to their commercial food fish production. The demand for farmed walleye and yellow perch as well as sunfish is well documented, and continues to grow as natural fisheries become depleted by disease or over fishing. Sales of excess fingerlings could generate as much as $100,000 or more in annual revenues for operational expenses.

7.) **Captive Broodstock** – The establishment of captive broodstock would provide a number of benefits including but not limited to:

- Alleviate the need to capture wild fish each year.
- Reduced possible disease introduction.
- Development of F generations which feed train easily.
- Development of broodstock which are easier to spawn and handle.
- Synchronized ovulation and spermiation.

This state-of-the-art-hatchery is capable with minimal expenditures of producing a wide range of species in addition to the species mentioned above. Such species as yellow perch, crappie and bluegill are all viable candidates for FPH and with careful management could be produced year round.

In summary it is suggested that all of the above solutions be initiated in order to maximize utilization of Fort Peck Warm Water Hatchery. The above solutions are well documented alternatives which have been tried and used at other state, federal and private hatcheries. Documentation and support materials are available upon request.

The author would also like to acknowledge the cooperation of the Fort Peck Warm Water Hatchery in compiling pertinent information in regards to this evaluation. This report is in no way meant to reflect badly upon the hatchery or its personnel. I believe they are all very competent at their jobs and are doing excellent work as per their orders from MFWP.